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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,932	10/29/2003	Robert Warner	4980-102 US	7039

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EXAMINER	
YUN, EUGENE	

ART UNIT	PAPER NUMBER
2618	

DATE MAILED: 09/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/695,932	WARNER ET AL.	
	Examiner	Art Unit	
	Eugene Yun	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Sandhu et al. (US 6,438,389).

Referring to Claim 1, Sandhu teaches a method of adapting a wireless communication system comprising the steps of:

Selecting a desired functionality of said wireless communication system (see col. 7, lines 48-61); and

Adapting said wireless communication system to support said desired functionality at an optimized benefit (see col. 7, line 62 to col. 8, line 7).

Referring to Claim 2, Sandhu also teaches said desired functionality is defined by criteria selected from one or more of a maximum range of communication with said wireless communication system, quality of a transmission link in said wireless communication system, capacity of said wireless communication system, power consumption of said wireless communication system, protocols supported in said wireless communication system, modulation techniques used in said wireless communication system and processing techniques for combining signals in said wireless communication system (see col. 6, lines 18-25).

Referring to Claim 3, Sandhu also teaches determining a reference design having a maximum number of antennas of a transmitter or receiver (see 20 in fig. 5), a maximum number of RF chains at a transmitter or receiver (see 36, 38, 44, and 64 in fig. 5), maximum power consumption and processing techniques for implementing maximum functionality and said reference design is adapted to support said desired functionality (see col. 4, lines 29-40).

Referring to Claim 4, Sandhu also teaches said wireless communication system is adapted by adapting a number of antennas used at a transmitter or receiver of said wireless communication system (see col. 4, lines 50-60).

Referring to Claim 5, Sandhu also teaches said wireless communication system is adapted by adapting a number of RF chains used at a transmitter or receiver of said wireless communication system (see col. 5, lines 6-20).

Referring to Claim 6, Sandhu also teaches said wireless communication system is adapted by including antenna selection diversity used with a determined number of diversity antennas of said wireless communication system (see col. 8, lines 8-14).

Referring to Claim 7, Sandhu also teaches said diversity antennas are obtained from one or more of spatial diversity, beam diversity, polarization diversity, angular diversity, and pattern diversity (see col. 8, lines 8-14).

Referring to Claim 8, Sandhu also teaches said wireless communication is adapted by adapting power consumption of said wireless communication system (see col. 4, lines 29-34).

Referring to Claim 9, Sandhu also teaches said power consumption is adapted by one or more of adapting a number of antennas used at a transmitter or receiver of said wireless communication system, adapting a number of RF chains used at a transmitter or receiver of said wireless communication system or selection of a power control algorithm (see col. 5, lines 13-20).

Referring to Claim 10, Sandhu also teaches said wireless communication is adapted by selection of processing techniques for processing signals of one or more of the antennas used at a transmitter or receiver of said wireless communication system (see col. 5, lines 41-49).

Referring to Claim 11, Sandhu also teaches said processing techniques are selected from one or more of maximal ratio combining (MRC), equal-gain combining, and minimum mean square error (MMSE) combining (see col. 4, lines 38-41).

Referring to Claim 12, Sandhu also teaches determining performance and cost of the adapted wireless communication system (see col. 7, lines 62-66), determining if said determined performance and cost satisfy the desired functionality (see col. 8, lines 2-7), and repeating said adapting step and the previous steps until said determined performance and cost satisfy the desired functionality (see col. 8, lines 2-7).

Claims 13-24 have similar limitations as claims 1-12.

Referring to Claim 25, Sandhu teaches a system for adapting a wireless communication system comprising:

At least one antenna 20 (fig. 5);

At least one RF chain receiving a signal from one of said at least one antennas, said RF chain processing said signal to generate a RF output signal (see col. 5, lines 6-13);

Processing means for processing said RF output signal with one or more processing techniques to provide signal output (see col. 5, lines 41-49); and

means for optimizing performance of said wireless communication system determined from said signal output and optimizing cost for implementing said wireless communication system to support a defined functionality by adapting said wireless communication system through selecting one or more of a number of said at least one antennas, a number of said at least one RF chains and a type of said processing techniques (see col. 7, line 62 to col. 8, line 7).

Referring to Claim 26, Sandhu also teaches a plurality of said antennas (see 20 in fig. 5) and a plurality of said RF chains and further comprising select RF chain means for dynamically selecting one or more of said RF chains to be used in said adapted wireless network (see col. 5, lines 6-13).

Referring to Claim 27, Sandhu also teaches said select RF chain means selects said one or more RF chains based on power consumption of said defined functionality (see col. 6, lines 18-25).

Referring to Claim 28, Sandhu also teaches said select RF chain means selects said RF chain having the highest receive signal power (see col. 5, lines 41-49).

Referring to Claim 29, Sandhu also teaches a plurality of said antennas and a plurality of said RF chains and further comprising select diversity means for selecting said plurality of antennas (see col. 8, lines 8-14).

Referring to Claim 30, Sandhu also teaches said diversity comprises selection of said plurality of antennas for use in said system (see col. 8, lines 8-14).

Referring to Claim 31, Sandhu also teaches said diversity comprises combining of said plurality of antennas with processing techniques selected from one or more of maximal ratio combining (MRC), equal-gain combining, and minimum mean square error (MMSE) combining (see col. 4, lines 38-41).

Referring to Claim 32, Sandhu also teaches said diversity comprises antenna diversity obtained from said antennas using one or more of spatial diversity, beam diversity, polarization diversity, angular diversity, pattern diversity (see col. 8, lines 8-14).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugene Yun whose telephone number is (571) 272-7860. The examiner can normally be reached on 9:00am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew D. Anderson can be reached on (571)272-4177. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Eugene Yun
Examiner
Art Unit 2618

EY

Matthew D. Anderson
Supervisory Patent Examiner